IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Nelson Liang An Chang	Art Unit	: 2629
Serial No.	: 10/764,423	Examiner	: Holton, Steven E.
Filed	: January 23, 2004	Confirmation No.	: 2026
Title	: SYSTEMS AND METHODS OF INTERFACING WITH A MACHINE		

Commissioner for Patents
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APPEAL BRIEF

I. Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, L.P., a Texas Limited Partnership having its principal place of business in Houston, Texas.

II. Related Appeals and Interferences

Appellant is not aware of any related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1-6, 8-37, and 39-65, which are the subject of this appeal, are pending.

Claims 7 and 38 are canceled.

Claims 1-6, 8-37, and 39-65 stand rejected.

Appellant appeals all rejections of the pending claims 1-6, 8-37, and 39-65.

CERTIFICATE OF TRANSMISSION

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IV. Status of Amendments

The amendments filed November 5, 2003, have been entered and acted upon by the Examiner.

No amendments were filed after the final Office action dated August 26, 2004.

V. Summary of Claimed Subject Matter

In the following Summary, the citations in parentheses are representative of support provided in the application.

A. Independent claim 1

The aspect of the invention defined in independent claim 1 is a method of interfacing with a machine. In accordance with this method, at each of multiple capture times, a respective image is contemporaneously acquired from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images (page 7, lines 17-22; FIG. 3, block 40). An input target is detected in the acquired images (page 7, lines 23-24; FIG. 3, block 42). Two-dimensional coordinates of the input target detected in the acquired images are computed (page 9, lines 23-25; FIG. 3, block 64). A spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images is constructed (page 9, line 31 - page 10, line 2; FIG. 3, block 66). The spatiotemporal input data structure is processed to identify an input instruction (page 12, lines 3-5; FIG. 3 block 92). The identified input instruction is executed on the machine (page 15, lines 5-6; FIG. 3, block 138).

B. Dependent claim 13

Claim 13 depends from claim 1 and recites that the spatiotemporal input data structure is constructed in the form of a linked list of data records (page 9, line 31 - page 10, line 2; FIG. 3, block 66; claim 13 as originally filed).

C. Independent claim 30

The aspect of the invention defined in independent claim 30 is a method of interfacing with a machine. In accordance with this method, sets of contemporaneous images of an interactive space are acquired from multiple respective fields of view (page 7, lines 17-22; FIG. 3, block 40). An input target is detected in the acquired images (page 7, lines 23-24; FIG. 3, block 42). Coordinates of the input target detected in the acquired images are computed (page 9, lines 23-25; FIG. 3, block 64). A spatiotemporal input data structure linking input target coordinates computed from contemporaneous images to respective reference times is constructed (page 9, line 31 - page 10, line 2; FIG. 3, block 66). The spatiotemporal input data structure is processed to identify an input instruction (page 12, lines 3-5; FIG. 3 block 92). The identified input instruction is executed on the machine (page 15, lines 5-6; FIG. 3, block 138). The method also includes interpolating between fields of view to generate a synthetic view of the interactive space (page 10, lines 20-21; page 18, line 32 - page 19, line 20).

D. Independent claim 31

The aspect of the invention defined in independent claim 31 is a system for interfacing with a machine that comprises multiple imaging devices and a processing module. The multiple imaging devices are configured to contemporaneously acquire, at each of multiple capture times, a respective image from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images (page 7, lines 17-22; FIG. 3, block 40). The processing module is configured to detect an input target in the acquired images (page 7, lines 23-24; FIG. 3, block 42), compute two-dimensional coordinates of the input target detected in the acquired images (page 9, line 31 - page 10, line 2; FIG. 3, block 66), construct a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images (page 9, line 31 - page 10, line 2; FIG. 3, block 66), process the spatiotemporal input data structure to identify an input instruction (page 12, lines 3-5; FIG. 3 block 92), and execute the identified input instruction on the machine (page 15, lines 5-6; FIG. 3, block 138).

E. Independent claim 32

The aspect of the invention defined in independent claim 32 is a machine-readable medium storing machine-readable instructions for causing a machine to perform the following operations. At each of multiple capture times, a respective image is contemporaneously acquired from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images (page 7, lines 17-22; FIG. 3, block 40). An input target is detected in the acquired images (page 7, lines 23-24; FIG. 3, block 42). Two-dimensional coordinates of the input target detected in the acquired images are computed (page 9, lines 23-25; FIG. 3, block 64). A spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images is constructed (page 9, line 31 - page 10, line 2; FIG. 3, block 66). The spatiotemporal input data structure is processed to identify an input instruction (page 12, lines 3-5; FIG. 3 block 92). The identified input instruction is executed on the machine (page 15, lines 5-6; FIG. 3, block 138).

F. Independent claim 33

The aspect of the invention defined in independent claim 33 is a method of interfacing with a machine. In accordance with this method, an image is displayed at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space (page 24, lines 8-13; FIG. 14). Images of the interactive space are acquired from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location (page 24, line 28 - page 25, line 2). An input target is detected in the acquired images (page 7, lines 23-24; FIG. 3, block 42; page 25, lines 10-12). Coordinates of the input target detected in the acquired images are computed (page 9, lines 23-25; FIG. 3, block 64). An input instruction is identified based on the computed input coordinates (page 12, lines 3-5; FIG. 3 block 92). The identified input instruction is executed on the machine (page 15, lines 5-6; FIG. 3, block 138).

G. Independent claim 63

The aspect of the invention defined in independent claim 63 is a Claim 63 (previously presented): A system of interfacing with a machine. The system comprises a display, at least one imaging device, and a processing system. The display is configured to present an image at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space (page 24, lines 8-13; FIG. 14). The at least one imaging device is configured to acquire images of the interactive space from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location (page 24, line 28 - page 25, line 2). The processing system is configured to detect an input target in the acquired images (page 7, lines 23-24; FIG. 3, block 42; page 25, lines 10-12), compute coordinates of the input target detected in the acquired images (page 9, lines 23-25; FIG. 3, block 64), identify an input instruction based on the computed input coordinates (page 12, lines 3-5; FIG. 3 block 92), and execute the identified input instruction on the machine (page 15, lines 5-6; FIG. 3, block 138).

H. Independent claim 64

The aspect of the invention defined in independent claim 64 is a Claim machine-readable medium storing machine-readable instructions for causing a machine to perform the following operations: display an image at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space (page 24, lines 8-13; FIG. 14); acquire images of the interactive space from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location (page 24, line 28 - page 25, line 2); detect an input target in the acquired images (page 7, lines 23-24; FIG. 3, block 42; page 25, lines 10-12); compute coordinates of the input target detected in the acquired images (page 9, lines 23-25; FIG. 3, block 64); identify an input instruction based on the computed input coordinates (page 12, lines 3-5; FIG. 3 block 92); and execute the identified input instruction on the machine (page 15, lines 5-6; FIG. 3, block 138).

I. Dependent claim 65

Claim 65 depends from claim 1 that recites "further comprising interpolating between ones of the images contemporaneously acquired from ones of the fields of view to generate a synthetic view of the interactive space" (page 10, lines 20-21; page 18, line 32 - page 19, line 20).

VI. Grounds of Rejection to be Reviewed on Appeal

A. Claims 1, 2, 4, 5, 8-12, 27-29, 31, and 32 stand rejected under 35 U.S.C. §102(b) over Mack (U.S. 6,198,485).

B. Claim 13 stands rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485).

C. Claim 3 stands rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Kumar (U.S. 6,204,852).

D. Claims 6, 14, and 15 stand rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Pryor (U.S. 7,042,440).

E. Claims 14 and 16-26 stand rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Schmalstieg (U.S. 6,842,175).

F. Claims 30 and 65 stand rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Turkowski (U.S. 5,926,190).

G. Claims 33-37, 39, and 60-64 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332).

H. Claims 41-44 and 46 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332) and Mack (U.S. 6,198,485).

I. Claims 45, 47, and 48 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332), Mack (U.S. 6,198,485), and Pryor (U.S. 7,042,440).

J. Claims 47 and 49-59 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332), Mack (U.S. 6,198,485), and Schmalstieg (U.S. 6,842,175).

VII. Argument

A. Claim rejections under 35 U.S.C. § 102(b)

Claims 1, 2, 4, 5, 8-12, 27-29, 31, and 32 stand rejected under 35 U.S.C. §102(b) over Mack (U.S. 6,198,485).

1. Applicable standards for sustaining a rejection under 35 U.S.C. § 102(b)

The relevant part of 35 U.S.C. § 102(b) recites that "A person shall be entitled to an invention, unless - ... the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." Anticipation under 35 U.S.C. § 102(b) requires that each and every element of the claimed invention be present, either expressly or inherently, in a single prior art reference. EMI Group N. Am., Inc., v. Cypress Semiconductor Corp., 268 F.3d 1342, 1350 (Fed. Cir. 2001). Anticipation must be proved by substantial evidence. In re Crish, 393 F.3d 1253, 73 USPQ2d 1364 (Fed. Cir. 2004).

2. Independent claim 1

a. Introduction

Independent claim 1 recites:

> Claim 1 (previously presented): A method of interfacing with a machine, comprising:
>
> at each of multiple capture times, contemporaneously acquiring a respective image from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images;
>
> detecting an input target in the acquired images;
>
> computing two-dimensional coordinates of the input target detected in the acquired images;
>
> constructing a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images;

> processing the spatiotemporal input data structure to identify an input instruction; and
>
> executing the identified input instruction on the machine.

As explained in detail below, the rejection of independent claim 1 under 35 U.S.C. § 102(b) over Mack should be withdrawn because Mack neither expressly nor inherently discloses each and every element of the invention defined by the claim.

<u>b. The Examiner's position and Appellant's rebuttal to the Examiner's position</u>

In support of the rejection of independent claim 1, the Examiner has acknowledged that Mack does not expressly disclose the "constructing" element of claim 1 (see page 3, lines 7-10, of the final Office action). In an effort to make-up for this failure of Mack's disclosure, the Examiner has argued that (see page 3, line 10 - page 4, line of the final Office action; emphasis added):

> ...Mack discloses determining gesture inputs based on the movements of objects within the interactive space (col. 4, line 45 -col. 5, line 12). <u>Such a gesture would require the system to determine and save the coordinates determined from the images in a data structure while knowing the time in which the coordinates are determined</u>. Without time and coordinate information the gestures could not be determined by the system. Further, if a data structure saving both the location information and coordinate information from the different two dimensional coordinates was not created, the computer would be unable to manipulate the data for calculation of three-dimensional coordinates and determination of gestures for operation of the computer system. Therefore, <u>the generation of a data structure linking the capture times with the two-dimensional coordinates for later processing to determine input instructions and executing the instructions</u> is inherent within the input system of Mack so that gestures can be determined to execute processes within the computer system.

Mack, however, neither expressly nor inherently discloses "at each of multiple capture times, contemporaneously acquiring a respective image from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images" and "constructing a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the

contemporaneously acquired images in a respective one of the sets of contemporaneous images," as now recited in claim 1.

The made-up rationale given by the Examiner in support of the rejection of claim 1 does not meet the language of the claim. Indeed, claim 1 does not recite determining and saving "the coordinates determined from the images in a data structure while knowing the time in which the coordinates are determined," nor does it recite generating "the generation of a data structure linking the capture times with the two-dimensional coordinates for later processing to determine input instructions and executing the instructions." Instead, claim 1 recites "constructing a spatiotemporal input data structure linking each of the capture <u>times</u> to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images" (emphasis added). The rationale given by the Examiner in support of the rejection of claim 1 does not show that Mack's system constructs "a spatiotemporal input data structure linking each of the capture <u>times</u> to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images." Therefore, the Examiner has not established a *prima facie* case the Mack inherently discloses all the elements of claim 1.

Moreover, in the cited section of Mack's disclosure, Mack discloses that the system 300 tracks the three-dimensional movement of the user's eyes and the user's head using three-dimensional depth, rotation, and translation parameters. The tracked 3-D data, however, does not link each of <u>multiple capture times</u> to the computed <u>two-dimensional coordinates</u> of an input target in each of the contemporaneously acquired images in a respective contemporaneous image set created by contemporaneously acquiring a respective image from each of multiple fields of view defining an interactive space, as recited in claim 1. Instead, the tracked 3-D data merely stores three-dimensional depth, rotation, and translation parameter values with the associated capture times.

For example, Mack expressly discloses that in the process of computing the 3-D data, the system simply determines the object points P1, P2 in each stereo image pair and finds "the intersection of the lines connecting the camera sources and the corresponding image object points on the image planes" (col. 6, lines 31-34; also see col. 5, lines 13-64). This process is performed separately for each stereo image pair and involves, for each stereo image pair, inputting the constituent stereo images and outing the calculating 3-D coordinate

of the object. Contrary to the Examiner's position, there is no need whatsoever for Mack's system to construct "a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images," as recited in claim 1.

For at least these reasons, the rejection of claim 1 under 35 U.S.C. § 102(b) over Mack should be withdrawn.

3. Dependent claims 2, 4, 5, 8-12, and 27-29

Each of claims 2, 4, 5, 8-12, and 27-29 incorporates the elements of independent claim 1 and therefore is patentable over Mack for at least the same reasons explained above in connection with independent claim 1.

4. Independent claim 31

Independent claim 31 recites features that essentially track the pertinent features of independent claim 1 discussed above. Therefore, independent claim 31 is patentable over Mack for at least the same reasons explained above in connection with independent claim 1.

5. Independent claim 32

Independent claim 31 recites features that essentially track the pertinent features of independent claim 1 discussed above. Therefore, independent claim 31 is patentable over Mack for at least the same reasons explained above in connection with independent claim 1.

B. Claim rejections under 35 U.S.C. § 103(a)

1. Applicable standards for sustaining a rejection under 35 U.S.C. § 103(a)

"A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. §103(a).

In an appeal involving a rejection under 35 U.S.C. § 103, an examiner bears the initial burden of establishing *prima facie* obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To support a *prima facie* conclusion of obviousness,

the prior art must disclose or suggest all the limitations of the claimed invention.[1] See In re Lowry, 32 F.3d 1579, 1582, 32 USPQ2d 1 031, 1034 (Fed. Cir. 1994). If the examiner has established a *prima facie* case of obviousness, the burden of going forward then shifts to the applicant to overcome the *prima facie* case with argument and/or evidence. Obviousness, is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. This inquiry requires (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. See KSR Int'l Co. v. Teleflex Inc., No. 127 S. Ct. 1727, 1728 (2007) (citing Graham v. John Deere, 383 U.S. I, 17-18, 148 USPQ 459, 467 (1966)). If all claim limitations are found in a number of prior art references, the fact finder must determine whether there was an apparent reason to combine the known elements in the fashion claimed. See KSR, 1741. This analysis should be made explicit. KSR at 1741 (citing In re Kahn, 441 F. 3d 977, 988 (Fed. Cir. 2006): "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

2. Claim 13

Claim 13 stands rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485).

Claim 13 incorporates the elements of independent claim 1 and therefore is patentable over Mack for at least the same reasons explained above in connection with independent claim 1.

In support of the rejection of claim 13 under 35 U.S.C. § 103(a) over Mack, the Examiner has taken the following position: (see § 4 on pages 5-6 of the final Office action):

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[1] The U.S. Patent and Trademark Office has set forth the following definition of the requirements for establishing a *prima facie* case of unpatentability (37 CFR § 1.56(b)(ii)):

> A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

> The Examiner notes that the use of a linked list data structure to store input data would be a design choice for one skilled in the art. One skilled in the art would be motivated to utilize a linked list data structure because of the ability of a linked list to store a sequence of information in order with each piece of data being linked directly to the following (and sometimes preceding) data. It would be an obvious choice for one skilled in the art to use a linked list to store a sequence of input positions associated in a sequence of time.

The storage of Mack's 3-D input data in the hypothetical linked list data structure invented by the Examiner, however, does not meet the claim language, which requires "a spatiotemporal input data structure linking each of the capture times to the computed <u>two-dimensional coordinates</u> of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images" (emphasis added).

For at least this additional reason, the rejection of claim 13 under 35 U.S.C. § 103(a) over Mack should be withdrawn.

<u>3. Claim 3</u>

Claim 3 stands rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Kumar (U.S. 6,204,852).

Claim 3incorporates the elements of independent claim 1. Kumar does not make-up for the failure of Mack to disclose or suggest the elements of independent claim 1 discussed above. Therefore, claim 3 is patentable over Mack in view of Kumar for at least the same reasons explained above in connection with independent claim 1.

<u>4. Claims 6, 14, and 15</u>

<u>a. Introduction</u>

Claims 6, 14, and 15 stand rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Pryor (U.S. 7,042,440).

Each of claims 6, 14, and 15 incorporates the elements of independent claim 1. Pryor does not make-up for the failure of Mack to disclose or suggest the elements of independent claim 1 discussed above (see page 14 of the Amendment dated June 21, 2007). Therefore,

claims 6, 14, and 15 are patentable over Mack in view of Pryor for at least the same reasons explained above in connection with independent claim 1.

5. Claims 14 and 16-26

Claims 14 and 16-26 stand rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Schmalstieg (U.S. 6,842,175).

Each of claims 14 and 16-26 incorporates the elements of independent claim 1. Schmalstieg does not make-up for the failure of Mack to disclose or suggest the elements of independent claim 1 discussed above. Therefore, claims 14 and 16-26 are patentable over Mack in view of Schmalstieg for at least the same reasons explained above in connection with independent claim 1.

6. Claims 30 and 65

Claims 30 and 65 stand rejected under 35 U.S.C. § 103(a) over Mack (U.S. 6,198,485) in view of Turkowski (U.S. 5,926,190).

a. Introduction

Independent claim 30 recites:

> Claim 30 (previously presented): A method of interfacing with a machine, comprising:
>
> acquiring sets of contemporaneous images of an interactive space from multiple respective fields of view;
>
> detecting an input target in the acquired images;
>
> computing coordinates of the input target detected in the acquired images;
>
> constructing a spatiotemporal input data structure linking input target coordinates computed from contemporaneous images to respective reference times;
>
> processing the spatiotemporal input data structure to identify an input instruction; and
>
> executing the identified input instruction on the machine; and
>
> interpolating between fields of view to generate a synthetic view of the interactive space.

The Examiner has given the following explanation in support of the rejection of claim 30 (see § 8 on page 10 of the final Office action; emphasis added):

> Regarding claim 30, as discussed above, Mack discloses all steps of inputting coordinate information, determining gestures based on the information and executing instructions based on the input gesture information. Further, Mack discloses changing the viewpoints of displayed objects based on the input gestures (col. 5, lines 1-12).
>
> However, Mack does not expressly disclose generating different viewpoints based on interpolating between different fields of view.
>
> Turkowski discloses a method of generating different viewpoints of an object for display based on interpolation between two known fields of view (abstract; Fig. 3; col. 4, lines 12-53).
>
> At the time of invention it would have been obvious to modify the teachings of Mack with the teachings of Turkowski. <u>The viewpoint modification methods of Mack could be changed to include generation of new viewpoints based on the interpolation methods of Turkowski.</u> The rationale would have been to include known methods for generating new synthetic viewpoints from predefined viewpoints when viewing images on a computer system and moving between new viewpoints when viewing the images. Thus, it would have been obvious to modify the teachings of Mack with the teachings of Turkowski to produce a method of interfacing with a machine as described in claim 30.

In this explanation, however, the Examiner has not shown that Mack in view of Turkowski discloses "computing coordinates of the input target detected in the acquired images" and "constructing a spatiotemporal input data structure linking input target coordinates computed from contemporaneous images to respective reference times," as recited in claim 1. Therefore, the Examiner has not established a *prima facie* case that claim 30 is obvious over Mack in view of Turkowski. For at least this reason, the rejection of claim 30 over Mack in view of Turkowski should be withdrawn.

Moreover, neither Mack nor Turkowski discloses or suggests "computing coordinates of the input target detected in the acquired images" and "constructing a spatiotemporal input data structure linking input target coordinates computed from contemporaneous images to respective reference times," as recited in claim 1.

Mack expressly discloses that in the process of computing the 3-D data, the system simply determines the object points P1, P2 in each stereo image pair and finds "the intersection of the lines connecting the camera sources and the corresponding image object points on the image planes" (col. 6, lines 31-34; also see col. 5, lines 13-64). This process is performed separately for each stereo image pair and involves, for each stereo image pair, inputting the constituent stereo images and outing the calculating 3-D coordinate of the object. This process does not expressly nor inherently involve computing coordinates of the input target detected in the acquired images and constructing a spatiotemporal input data structure linking the input target coordinates computed from contemporaneous images to respective reference times. Indeed, the object points P1, P2 in each stereo image pair are not part of a spatiotemporal input data structure linking the object points P1, P2 computed from contemporaneous images to respective reference times. Instead, the output 3-D data is associated with respective capture times.

For at least these reasons, the rejection of claim 30 under 35 U.S.C. § 103(a) over Mack in view of Turkowski should be withdrawn.

The rejection of claim 30 over Mack in view of Turkowski also should be withdrawn for the following additional reason.

The Examiner's rejection of claim 30 over Mack in view of Turkowski is premised on the assertion that one skilled in the art would have been motivated to change the viewpoint modification mentioned in col. 5, lines 1-12, to include generation of new viewpoints based on the interpolation methods of Turkowski. Contrary to the Examiner's assertion, one skilled in the art would not have been motivated to change Mack's teachings in this way. In particular, the reference to "viewpoint modifications" in col. 5, lines 1-12 in Mack merely refers to "commands" that may be input by the user via head or eye movements. In this process, the head or eye movements are converted into 3-D input data and interpreted as viewpoint modification commands. In accordance with Mack's teachings, the stereo images are used only to determine the 3-D input data; they are not presented to the user; indeed, the user would not have any interest in different views of his or her eye or head movements. Therefore, one skilled in the art would not have had any motivation to change the viewpoint modification mentioned in col. 5, lines 1-12, to include generation of new viewpoints based on the interpolation methods of Turkowski interpolation between the stereo images, as proposed by the examiner.

For this additional reason, the rejection of claim 30 under 35 U.S.C. §103(a) over Mack in view of Turkowski should be withdrawn.

B. Claim 65

Claim 65 incorporates the elements of independent claim 1. Turkowski does not make-up for the failure of Mack to disclose or suggest the elements of independent claim 1 discussed above. Therefore, claim 65 is patentable over Mack in view of Turkowski for at least the same reasons explained above in connection with independent claim 1.

Claim 65 also is patentable over Mack in view of Turkowski for the additional reason explained above in connection with claim 30 (namely, one skilled in the art would have been motivated to change the viewpoint modification mentioned in col. 5, lines 1-12, to include generation of new viewpoints based on the interpolation methods of Turkowski).

7. Claims 33-37, 39, and 60-64

Claims 33-37, 39, and 60-64 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332).

a. Independent claim 33

Independent claim 33 recites:

> Claim 33 (previously presented): A method of interfacing with a machine, comprising:
>
> displaying an image at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space;
>
> acquiring images of the interactive space from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location;
>
> detecting an input target in the acquired images;
>
> computing coordinates of the input target detected in the acquired images;
>
> identifying an input instruction based on the computed input coordinates; and

executing the identified input instruction on the machine.

The rejection of claim 33 under 35 U.S.C. § 103(a) over Deleeuw in view of Ellenby should be withdrawn because the cited references do not disclose or suggest all the elements of the claim.

For example, neither Deleeuw nor Ellenby discloses or suggests "identifying an input instruction based on the computed input coordinates," as recited in claim 33.

In the rationale given by the Examiner in support of the rejection of claim 33, the Examiner has not shown that Deleeuw in view of Ellenby discloses the "identifying" element of claim 1 (see § 9 on pages 11-12 of the final Office action). Instead, the Examiner improperly has simply read the "identifying" element of claim 33 out of the claim. Thus, the Examiner has not established a *prima facie* case that claim 33 is obvious over Deleeuw in view of Ellenby. For at least this reason, the rejection of claim 33 under 35 U.S.C. § 103(a) over Deleeuw in view of Ellenby should be withdrawn.

In addition, the Examiner has argued that Deleeuw discloses "executing input instructions based on the coordinates of the target in the acquired images (col. 3, lines 29-35)" (page 12, lines 4-5, of the final Office action). This assertion, however, does not meet the language of claim 33. In particular, claim 33 recites "identifying an input instruction based on the computed input coordinates." Merely "executing input instructions based on the coordinates of the target in the acquired image" does not constitute "identifying an input instruction based on the computed input coordinates;" nor does it constitute "executing the identified input instruction on the machine." For at least this additional reason, the rejection of claim 33 under 35 U.S.C. § 103(a) over Deleeuw in view of Ellenby should be withdrawn.

Furthermore, neither Deleeuw nor Ellenby discloses or suggests "acquiring images of the <u>interactive space</u> from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location," where coordinates of a input target detected in the acquired images of the interactive space are computed and based on which an input instruction is identified.

The Examiner has acknowledged that Deleeuw does not disclose the "acquiring" element of independent claim 33 (see page 12, first full ¶). The Examiner has relied on Ellenby in an effort to make-up for this failure of Deleeuw's disclosure. In particular, the Examiner has taken the position that (page 12, second full ¶):

> Ellenby discloses an augmented reality display system wherein the camera system (Fig. 4, element 41) is location with an optical axis (Fig. 4, element 49) intersecting a central area of the display location (Fig. 4, element 42).

With respect to the embodiment relied upon by the Examiner, Ellenby discloses (col. 6, lines 26-35):

> ...FIG. 4 shows an arrangement where a camera 41 and a display 42 are aligned to a viewing axis 49. Electronic images are transmitted 43 to a computer having an electronic image combiner 47. <u>Measurements of position 44 and attitude 45 stimulate an image generator 46</u> which provides computer generated graphics and imagery relating to the scene being addressed as predicted by the computer and transmits 48 this information to the combiner 47. A composite image is then presented at the display aligned with its normal direction along the viewing axis.

Thus, Ellenby's imaging system does not acquire images of "an interaction space" in which an input target can be detected, coordinates of the input target detected in the acquired images can be computed, and an input instruction can by identified based on the computed input coordinates detected in the acquired images of the interactive space. Instead, Ellenby's imaging system is designed to capture images of a remote scene (e.g., a scene of objects in outer space, or a scene of objects on Earth) that can be uniquely identified by position and attitude (see col. 4, lines 55-59).

For at least this additional reason, the rejection of claim 33 under 35 U.S.C. § 103(a) over Deleeuw in view of Ellenby should be withdrawn.

The rejection of claim 33 also should be withdrawn because at the time the invention was made there was no apparent reason to combine the teachings of Deleeuw and Ellenby in the manner proposed by the Examiner. In particular, the Examiner has taken the position that (page 12, second full ¶; emphasis added):

> At the time of invention it would have been obvious to one of ordinary skill in the art to modify the teachings of Deleeuw with the teachings of Ellenby. <u>The reflective glass position of Deleeuw used to provide a viewing location of the augmented reality display system could be replaced with a full display with camera directly behind the display of Ellenby.</u> The motivation would be to provide an augmented reality system where the final viewed image appears as if the viewer was looking at the

> scene with augmented information (Ellenby; col. 3, lines 48-67). Thus, it would have been obvious to modify the teachings of Deleeuw with the teachings of Ellenby to produce a method of interfacing with a machine as described in claims 33, 63, and 64.

Contrary to the Examiner's position, one skilled in the art would not have been motivated to replace the transreflective or dichroic reflector 24 with Ellenby's imaging system shown in FIG. 4.

First, Ellenby's display 42 is opaque and therefore the Examiner's proposed modification of Deleeuw's system would defeat the object of Deleeuw's invention to enable the user to directly view his or her hands (see col. 2, lines 6-10; also see claim 1).

Second, the Examiner's proposed modification of Deleeuw's system would require a display device that was integrated with the camera and therefore, unlike Deleeuw's invention, the Examiner's proposed modification could not leverage a user's existing computer/entertainment equipment. In this way, the Examiner's proposed modification would defeat the object of Deleeuw's invention to provide "virtual reality experience available at a relatively lower cost, for example in connection with toys and other entertainment devices" (col. 1, lines 23-26).

Third, Ellenby's imaging system is designed to capture images of a remote scene (e.g., a scene of objects in outer space, or a scene of objects on Earth) that can be uniquely identified by position and attitude (see col. 4, lines 55-59). Accordingly, the Examiner's proposed modification of Deleeuw's system would not work for its intended purpose of capturing images of the user's hand in the enclosure 12 (see FIG. 1).

Fourth, the rationale given by the Examiner in support of his proposed modification of Deleeuw's system (i.e., "to provide an augmented reality system where the final viewed image appears as if the viewer was looking at the scene with augmented information") already is achieved by Deleeuw's system (see, e.g., col. 2, lines 6-16). Since Deleeuw already achieves the purported result of the Examiner's proposed modification of Deleeuw's system, one skilled in the art would not have had any apparent reason to modify Deleeuw's system based on Ellenby's teachings "to provide an augmented reality system where the final viewed image appears as if the viewer was looking at the scene with augmented information." The fact is that neither Deleeuw nor Ellenby nor the knowledge generally available at the time the invention was made would have led one skilled in the art to believe

that there was any problem to be solved or any advantage that would be gained by the Examiner's proposed modification of Deleeuw's system because such modification would not have served any apparent useful purpose. The Examiner's reasoning in this regard only evidences the fact that the Examiner improperly has engaged in impermissible hindsight reconstruction of the claimed invention, using applicants' disclosure as a blueprint for piecing together elements from the prior art in a manner that attempts to reconstruct the invention recited in claim 33 only with the benefit of impermissible hindsight (see KSR Int'l Co. v. Teleflex Inc., slip op. at 17: "A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning."). Without any basis for combining the cited references, the Examiner' rationale in support of his proposed combination of Deleeuw and Ellenby amounts to no more than an impermissible conclusory statement, which cannot establish that one skilled in the art would have had any apparent reason to combine Fan and Porikli in the manner proposed by the Examiner. See In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

For at least these additional reasons, the rejection of independent claim 33 under 35 U.S.C. § 103(a) over Deleeuw in view of Ellenby should be withdrawn.

<u>b. Claims 34-37, 39, and 60-62</u>

Each of claims 34-37, 39, and 60-62 incorporates the elements of independent claim 33 and therefore is patentable over Deleeuw in view of Ellenby for at least the same reasons explained above in connection with independent claim 1.

<u>8. Claims 41-44 and 46</u>

Claims 41-44 and 46 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332) and Mack (U.S. 6,198,485).

Each of claims 41-44 and 46 incorporates the elements of independent claim 33. Mack does not make-up for the failure of Deleeuw in view of Ellenby to disclose or suggest the elements of independent claim 33 discussed above. Therefore, claims 41-44 and 46 are patentable over Deleeuw in view of Ellenby and Mack for at least the same reasons explained above in connection with independent claim 33.

9. Claims 45, 47, and 48

Claims 45, 47, and 48 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332), Mack (U.S. 6,198,485), and Pryor (U.S. 7,042,440).

Each of claims 45, 47, and 48 incorporates the elements of independent claim 33. Mack and Pryor do not make-up for the failure of Deleeuw in view of Ellenby to disclose or suggest the elements of independent claim 33 discussed above. Therefore, claims 45, 47, and 48 are patentable over Deleeuw in view of Ellenby, Mack, and Pryor for at least the same reasons explained above in connection with independent claim 33.

10. Claims 47 and 49-59

a. Introduction

Claims 47 and 49-59 stand rejected under 35 U.S.C. § 103(a) over Deleeuw (U.S. 6,753,879) in view of Ellenby (U.S. 5,682,332), Mack (U.S. 6,198,485), and Schmalstieg (U.S. 6,842,175).

Each of claims 47 and 49-59 incorporates the elements of independent claim 33. Mack and Schmalstieg do not make-up for the failure of Deleeuw in view of Ellenby to disclose or suggest the elements of independent claim 33 discussed above. Therefore, claims 47 and 49-59 are patentable over Deleeuw in view of Ellenby, Mack, and Schmalstieg for at least the same reasons explained above in connection with independent claim 33.

VIII. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: June 13, 2009

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CLAIMS APPENDIX

The claims that are the subject of Appeal are presented below.

Claim 1 (previously presented): A method of interfacing with a machine, comprising:

at each of multiple capture times, contemporaneously acquiring a respective image from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images;

detecting an input target in the acquired images;

computing two-dimensional coordinates of the input target detected in the acquired images;

constructing a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images;

processing the spatiotemporal input data structure to identify an input instruction; and

executing the identified input instruction on the machine.

Claim 2 (original): The method of claim 1, wherein images of the interactive space are acquired from at least one stereoscopic pair of fields of view directed along substantially parallel axes intersecting the interactive space.

Claim 3 (original): The method of claim 1, wherein images of the interactive space are acquired from at least three different fields of view.

Claim 4 (original): The method of claim 1, wherein detecting the input target in the acquired images comprises comparing values of pixels in the acquired images to at least one threshold pixel value.

Claim 5 (original): The method of claim 4, wherein computing coordinates of the input target comprises computing coordinates of centroids of respective groups of pixels in the acquired images with values greater than the at least one threshold pixel value.

Claim 6 (original): The method of claim 4, wherein detecting the input target in the acquired images comprises segmenting foreground pixels from background pixels in the acquired images.

Claim 7 (canceled)

Claim 8 (previously presented): The method of claim 1, further comprising computing calibration parameters for the multiple fields of view.

Claim 9 (original): The method of claim 8, wherein computing coordinates of the detected input target comprises computing three-dimensional coordinates of the input target in the interactive space based on the computed two-dimensional coordinates and the computed calibration parameters.

Claim 10 (previously presented): The method of claim 9, wherein the spatiotemporal input data structure additionally links each of the capture times to respective three-dimensional coordinates of the input target computed from the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images.

Claim 11 (original): The method of claim 1, further comprising acquiring color values of the detected input target in the acquired images.

Claim 12 (previously presented): The method of claim 11, wherein the spatiotemporal input data structure additionally links each of the capture times to respective color values determined from the contemporaneously acquired images in a respective one of the sets of contemporaneous images.

Claim 13 (original): The method of claim 1, wherein the spatiotemporal input data structure is constructed in the form of a linked list of data records.

Claim 14 (previously presented): The method of claim 1, wherein processing the spatiotemporal input data structure comprises identifying traces of the input target in the interactive space, each trace being defined by a respective set of connected data items in the spatiotemporal input data structure.

Claim 15 (original): The method of claim 14, wherein identifying traces comprises detecting state change events and segmenting traces based on detected state change events.

Claim 16 (original): The method of claim 14, wherein identifying traces comprises computing coordinates of bounding regions encompassing respective traces.

Claim 17 (original): The method of claim 16, wherein the computed bounding region coordinates are two-dimensional coordinates of areas in the acquired images.

Claim 18 (original): The method of claim 16, wherein the computed bounding region coordinates are three-dimensional coordinates of volumes in the interactive space.

Claim 19 (original): The method of claim 14, wherein the spatiotemporal input data structure is processed to interpret the identified input target traces.

Claim 20 (original): The method of claim 19, further comprising comparing an identified trace to a predefined representation of an input gesture corresponding to a respective input instruction.

Claim 21 (original): The method of claim 20, wherein processing the spatiotemporal input data structure comprises translating the trace into a predefined alphanumeric character.

Claim 22 (original): The method of claim 19, further comprising comparing an identified trace to a location in the interactive space corresponding to a virtual interactive object.

Claim 23 (original): The method of claim 22, wherein the virtual interactive object corresponds to a virtual machine instruction input.

Claim 24 (original): The method of claim 23, wherein the virtual machine instruction input is predefined.

Claim 25 (original): The method of claim 23, further comprising constructing the virtual machine instruction input in response to processing of at least one identified input target trace.

Claim 26 (original): The method of claim 23, wherein the virtual machine instruction input corresponds to a respective mode of interpreting traces.

Claim 27 (original): The method of claim 1, wherein executing the identified input instruction comprises displaying an image in accordance with the identified input instruction.

Claim 28 (previously presented): The method of claim 27, wherein the displaying comprises displaying a combination of image data generated based on the acquired images and machine-generated virtual image data.

Claim 29 (original): The method of claim 27, further comprising displaying a sequence of images at the display location showing a virtual object being manipulated in accordance with one or more identified input instructions.

Claim 30 (previously presented): A method of interfacing with a machine, comprising:

acquiring sets of contemporaneous images of an interactive space from multiple respective fields of view;

detecting an input target in the acquired images;

computing coordinates of the input target detected in the acquired images;

constructing a spatiotemporal input data structure linking input target coordinates computed from contemporaneous images to respective reference times;

processing the spatiotemporal input data structure to identify an input instruction; and

executing the identified input instruction on the machine; and

interpolating between fields of view to generate a synthetic view of the interactive space.

Claim 31 (previously presented): A system for interfacing with a machine, comprising:

multiple imaging devices configured to contemporaneously acquire, at each of multiple capture times, a respective image from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images; and

a processing module configured to detect an input target in the acquired images, compute two-dimensional coordinates of the input target detected in the acquired images, construct a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images, process the spatiotemporal input data structure to identify an input instruction, and execute the identified input instruction on the machine.

Claim 32 (previously presented): A machine-readable medium storing machine-readable instructions for causing a machine to:

at each of multiple capture times, contemporaneously acquire a respective image from each of multiple fields of view defining an interactive space to create a respective set of contemporaneous images;

detect an input target in the acquired images;

compute two-dimensional coordinates of the input target detected in the acquired images;

construct a spatiotemporal input data structure linking each of the capture times to the computed two-dimensional coordinates of the input target in each of the contemporaneously acquired images in a respective one of the sets of contemporaneous images;

process the spatiotemporal input data structure to identify an input instruction; and

execute the identified input instruction on the machine.

Claim 33 (previously presented): A method of interfacing with a machine, comprising:

displaying an image at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space;

acquiring images of the interactive space from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location;

detecting an input target in the acquired images;

computing coordinates of the input target detected in the acquired images;

identifying an input instruction based on the computed input coordinates; and

executing the identified input instruction on the machine.

Claim 34 (original): The method of claim 33, wherein the display location corresponds to a display area of a portable electronic device.

Claim 35 (original): The method of claim 33, wherein the display location corresponds to a display area embedded in a desktop surface.

Claim 36 (original): The method of claim 33, wherein displaying the image comprises projecting the image onto a surface.

Claim 37 (original): The method of claim 33, wherein acquiring images comprises acquiring images of the interactive space from at least one field of view disposed between the display location and the interactive space.

Claim 38 (canceled)

Claim 39 (original): The method of claim 33, wherein acquiring images comprises acquiring images of the interactive space from multiple fields of view.

Claim 40 (original): The method of claim 39, further comprising interpolating between fields of view to display an image at the display location corresponding to a synthetic view of the interactive space.

Claim 41 (original): The method of claim 39, further comprising computing calibration parameters for the multiple fields of view.

Claim 42 (original): The method of claim 41, wherein computing coordinates of the detected input target comprises computing three-dimensional coordinates of the input target in the interactive space based on the computed calibration parameters.

Claim 43 (original): The method of claim 33, wherein detecting the input target in the acquired images comprises comparing values of pixels in the acquired images to at least one threshold pixel value.

Claim 44 (original): The method of claim 43, wherein computing coordinates of the input target comprises computing coordinates of centroids of respective groups of pixels in the acquired images with values greater than the threshold.

Claim 45 (original): The method of claim 43, wherein detecting the input target in the acquired images comprises segmenting foreground pixels from background pixels in the acquired images.

Claim 46 (original): The method of claim 33, wherein computing coordinates of the detected input target comprises computing two-dimensional coordinates of the input target detected in the acquired images.

Claim 47 (original): The method of claim 33, wherein identifying an input instruction comprises identifying traces of the input target in the interactive space.

Claim 48 (original): The method of claim 47, wherein identifying traces comprises detecting state change events and segmenting traces based on detected state change events.

Claim 49 (original): The method of claim 47, wherein identifying traces comprises computing coordinates of bounding regions encompassing respective traces.

Claim 50 (original): The method of claim 49, wherein the computed bounding region coordinates are two-dimensional coordinates of areas in the acquired images.

Claim 51 (original): The method of claim 49, wherein the computed bounding region coordinates are three-dimensional coordinates of volumes in the interactive space.

Claim 52 (original): The method of claim 47, wherein identifying the input instruction comprises interpreting the identified input target traces.

Claim 53 (original): The method of claim 52, further comprising comparing an identified trace to a predefined representation of an input gesture corresponding to a respective input instruction.

Claim 54 (original): The method of claim 53, wherein processing the spatiotemporal input data structure comprises translating the trace into a predefined alphanumeric character.

Claim 55 (original): The method of claim 52, further comprising comparing an identified trace to a location in the interactive space corresponding to a virtual interactive object.

Claim 56 (original): The method of claim 55, wherein the virtual interactive object corresponds to a virtual machine instruction input.

Claim 57 (original): The method of claim 56, wherein the virtual machine instruction input is predefined.

Claim 58 (original): The method of claim 56, further comprising constructing the virtual machine instruction input in response to processing of at least one identified input target trace.

Claim 59 (original): The method of claim 56, wherein the virtual machine instruction input corresponds to a respective mode of interpreting traces.

Claim 60 (original): The method of claim 33, wherein executing the identified input instruction comprises displaying an image at the display location in accordance with the identified input instruction.

Claim 61 (original): The method of claim 60, wherein the displayed image comprises a combination of image data generated based on the acquired images and machine-generated virtual image data.

Claim 62 (original): The method of claim 60, further comprising displaying a sequence of images at the display location showing a virtual object being manipulated in accordance with one or more identified input instructions.

Claim 63 (previously presented): A system of interfacing with a machine, comprising:

a display configured to present an image at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space;

at least one imaging device configured to acquire images of the interactive space from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location; and

a processing system configured to detect an input target in the acquired images, compute coordinates of the input target detected in the acquired images, identify an input instruction based on the computed input coordinates, and execute the identified input instruction on the machine.

Claim 64 (previously presented): A machine-readable medium storing machine-readable instructions for causing a machine to:

display an image at a display location disposed between a viewing space and an interactive space, wherein the displayed image is viewable from a perspective in the viewing space;

acquire images of the interactive space from a field of view directed toward the interactive space along an optical axis intersecting a central area of the display location;

detect an input target in the acquired images;

compute coordinates of the input target detected in the acquired images;

identify an input instruction based on the computed input coordinates; and

execute the identified input instruction on the machine.

Claim 65 (original): The method of claim 1, further comprising interpolating between ones of the images contemporaneously acquired from ones of the fields of view to generate a synthetic view of the interactive space.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 CFR §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the pending appeal. Therefore, no copies are required under 37 CFR § 41.37(c)(1)(ix) in the pending appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any decisions rendered by a court or the Board that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal. Therefore, no copies are required under 37 CFR § 41.37(c)(1)(x) in the pending appeal.